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THE
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☞See Advertisement on last page.

Poetry.

LABOR AND REST.

BY A. A. HAZZARD, M. D.

In the west, when day is done,
Slowly sinks the setting sun,
Weary laborers wend their way
Homeward, when the twilight gray
Darkens into evening shades,
While in forest and in glade,
Birds their merry carols cease,
And all is quietness and peace.
Then is creation's resting time,
Insects hum and ocean's chime,
Falling on the listening ear,
Bid us all attend and hear
The farewell hymn of parting day,
On time's fleet pinions borne away,
Nature yields her to repose,
And this law extensive shows
On her wide domain imprest,
"After labor there is rest."

FRAILTY OF MAN.

Like to the falling of a star,
Or as the flights of eagles are,
Or like the fresh spring's gaudy hue,
Or silver drops of morning dew;

Or like a wind that chafes the flood,
Or bubbles which on water stood;
E'en such is man, whose borrowed light
Is straight called in and paid to-night.

The wind blows out, the bubble dies;
The spring entombed in autumn lies:
The dew dries up, the star has shot;
The flight is past and man forgot.

SPEAK NOT HARSHLY.

BY MISS JULIA A. FLETCHER.

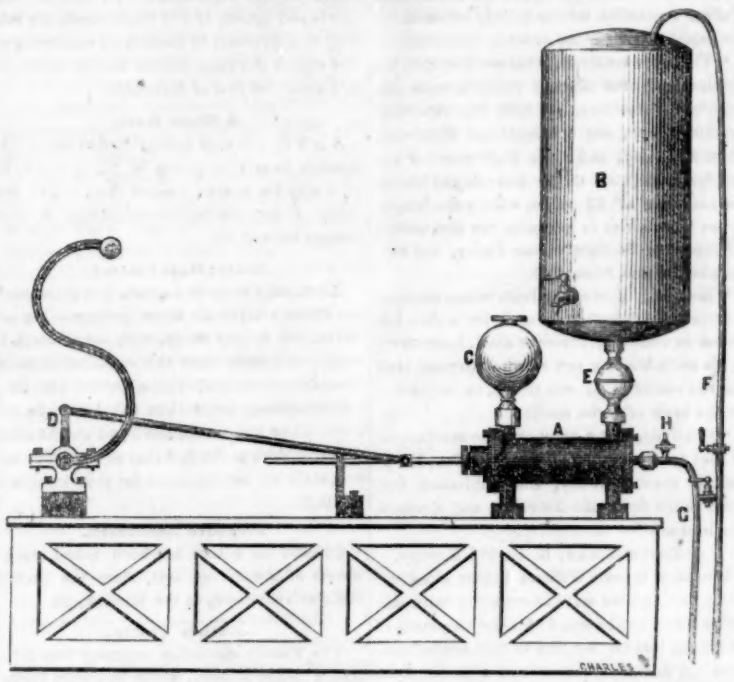
Speak not harshly—much of care
Every human heart must bear;
Enough of shadows sadly play
Around the very sunniest way—
Enough of sorrows darkly lie,
Veiled within the merriest eye.
By thy childhood's gushing tears—
By thy griefs of after years—
By the anguish thou dost know,
Add not to another's woe.

Speak not harshly—much of sin
Dwelleth every heart within;
In its closely covered cells
Many a wayward passion dwells.
By the many hours mispent—
By the gifts to error lent—
By the wrong thou didst not shun—
By the good thou hast not done,
With a lenient spirit scan
The weakness of thy brother man.

The Gastric Juice.

The gastric juice is worthy of remark. It is a tas' less, colorless, inodorous limpid fluid similar to water, and is adapted—in different animals—for different purposes.—Ir the hyæna and other carniverous animals it will not dissolve live flesh, but will dissolve dead. These creatures then live upon other animals, and even bones are soluble in their gastric juice, while it will not dissolve vegetables at all. On the other hand some animals live entirely on vegetables and their gastric juice will not dissolve animal food.

WINDER'S HYDRAULIC ENGINE.



In No. 42, volume 2, of the Scientific American, we gave a description of this invention, and explained its uses. It might now be thought superfluous to say any more upon the subject, but as we had not seen the apparatus when that description was published, and as many inquiries have been made in relation to it since that period, we now from occular demonstration can say something regarding its operation and qualities.

By reference to the above engraving a full explanation will be conveyed. A, is an air-tight cylinder worked by a handle and crank D. The piston, as will be easily observed, is guided parallel in the cylinder by the shackle bar moving through a centre guide. C, is a vacuum chamber fitted on one end of the cylinder, and B, an air chamber fitted on the other. E, is the brass globe coupling of the cylinder and air chamber. F and G, are two pipes, the one to force down air, and the other is the pipe through which the water is presed up, F the air pipe and G the water pipe.—It is well known that the common pressure of the atmosphere will only support a column of water of 31 or 32 feet—yet we have seen this machine so far overstep the law which guides the common pump, as to take water from a depth of 100 feet, and it can take water from any depth. It will be seen that it is not constructed upon the principle of the endless chain pump nor the force pump, for it has only one valve in the base of the air chamber B. The question then will be asked, how can it overstep the common and fixed law of atmospheric gravity? That law is not violated in this instance, but another principle is discovered, viz. that hydraulic and pneumatic pressure combined (the use of pneumatic pressure instead of mechanical, to raise water,) require not that amount of power to force water to any given height, as it does to use mechanical force alone. For example: Allow this apparatus to be fixed in a building 96 feet above sea level, it would require the power of three atmospheres to support a column of water of that height; but this machine proves that it will not require as much power to condense three atmospheres for that purpose as it does to force a column of water up that height, for a very little more power is required by it to elevate—press up—the water 96 feet, than it takes to raise it 32 feet.

OPERATION.—The two pipes F and G, are conducted from the apparatus down into a chamber of the same size as B, placed in the fountain. Every stroke then of the pump will force the air in the cylinder into the air chamber, which escaping by F, goes down into the fountain cylinder and forces the water up through G. By closing F, and opening H, the air can be condensed to any number of atmospheres, according to the strength of the cylinder, and water will be elevated to the number of atmospheres condensed. The only objection to this machine is the emptying of the fountain chamber of its air, when it gets empty of water. This, however, is easily done, and simply by opening the cock which connects the pipes G and F together, and the same pressure thus continually kept up. The cock H, is for the filling up the air chamber. Mr. L. L. Lee, of Milwaukie, is an agent for the sale of rights, and those who may wish to purchase a county right, or more, can communicate, post paid, with this office. There can be no doubt af the great value of this machine, and it is so simple that it can be made nearly as cheap as a common pump.

A Cloud of Ants.

A singular appearance in nature was witnessed in the eastern part of Schoharie county, a few days since, such as is common we believe in the eastern hemisphere, but seldom if ever seen in this country. A swarm of insects resembling winged ants, more than a mile in length, so dense as to obscure the light of the sun, passed over the neighborhood of Gallupville, and like pilgrims to the Temple of Mecca, left the path strewed with their dead.

The Chicago Tribune says the recent convention held in that city, put into the pockets of the citizens from $50,000 to $100,000

Vein of Lead.

A rich vein of lead has been discovered on the Harrisburg turnpike, near Lancaster, Pa. The ore is said to be found in great abundance and is very rich. Its discovery was the result of an examination into the cause of the premature ripening of grain on the land which covered the metalic treasure.

Rich Silver Ore.

A very splendid parcel of silver ore lately arrived in London from Valparaiso. Its value, by different assays, has been computed at the rate of from 1590*l.* to 1600*l.* for the ton of 21 cwts. The purchasers, by tender, were, the silver ore smelting firm of Mullins and Co. Battersea, near London.

RAIL ROAD NEWS.

The following is the comparative amount of receipts on the Old Colony Railroad, Mass. during two weeks.

Week ending Aug. 28	$4309
Sept. 12	4279

Earnings of the last quarter on the Boston and Maine Rail Road:

June,	$40,306
July,	62,036
August,	53,679
	$156,021

Western Railroad.

The receipts of this road for the second week of this month are stated at $33,242—but little more than $1,700,000 per annum.

This railway has had an income of receipts during the last nine months over the last year of $233,077.

Buffalo and Mississippi Rail Road.

The Buffalo and Mississippi Railroad is the name of a Railroad chartered by the legislatures of Ohio and Indiana, and which, when completed, will form a connecting line between Toledo, at the western extremity of Lake Erie, and Chicago, on the south-western point of Lake Michigan.

"The whole length of the road according to a survey, will be 232 miles, and it will run in nearly a straight course in Ohio and Indiana, across the neck of the peninsula formed by Huron and Michigan. According to the report of the engineer who surveyed the route, the whole cost of the road is estimated at $5,215,000."

English Railways.

By a parliamentary return just printed, it appears that, to the 21st ult. £35,773,789 14s. 8d. was paid, and £11,830,761 13s. 10d. remained to be paid by the several railway companies having had purchase, sale, lease, or amalgamation bills before Parliament in the late session.

French Rail Roads.

The *Moniteur Industriel* states, that the losses on railroad transactions on the Paris Bourse, between the month of October 1845, and the end of July 1847, amounted to the enormous sum of 488,000,000f., nearly $100,000,000.

TELEGRAPH NEWS.

The Louisville Journal is informed that House's printing apparatus is to be attached to the battery of the electric telegraph in that city. By this arrangement, the managers expect that they will be able to furnish copies of the President's message for the newspaper offices in that city *within five minutes after the reading of it by the clerk of the House of Representatives!*

Meeting of Telegraph Directors.

The Directors of the Magnetic Telegraph Company from New York, Philadelphia, Wilmington, Baltimore and Washington, held a special meeting at Barnum's City Hotel, Baltimore, on Tuesday, at which the subject of erecting additional wires, in view of the increased business over the line, as anticipated from the approaching completion of the Southern telegraph line through to Mobile and New Orleans, was considered, as also a proposition for carrying the wires across the Hudson River into the City of New York.

New Line.

Contracts have been made to construct a line of Telegraph from Norwich Con., to Worcester, Mass. The whole is to be completed by the first of January 1848.

New York Canal.

The sum of $2,215,302 has been received for tolls during the present season thus far—123 days.

The quantity of coal consumed in the United States, is estimated at not less than 2,800,000 tons weekly.

Boston Mechanics' Fair.

We feel no little pleasure in noticing this fair. The mechanics of the Old Dominion are a spirited and noble class of men, and the great display of articles of manufacture in sacred Faneuil Hall proclaimed the enterprise and ingenuity of New England.

We would be happy to notice every article which was displayed, but our limits will not permit.

This is the fifth exhibition of the Mass. Charitable Mechanic's Association, and judging from the past, the best of the five exhibitions. This is cheering.

There have been many articles of superb needlework displayed, speaking volumes for the domestic character of the Yankee girls, among which was a beautiful ottoman by a young lady with one hand. Sewing silk, equal to any foreign, was exhibited; also a most exquisite piece of tambouring. Elegant prints, straw bonnets—in fact the grandness of the display cannot be described. We can only speak in rapture of the whole. There were some fine pieces of water twist cloth from our old acquaintance at New York Mills, and there was a curious invention called an umbrella lock-up, also a most excellent machine called a nautillus pump, which we shall describe more fully in our next number.

Such institutions have our warmest wishes for success, for the good which they perform by exciting a generous and noble emulation among our working people, is incalculable.

New York State Fair.

The Fair has just closed its annual exhibition at Saratoga. An address was delivered by General Dix, prepared by one now in the tomb—the Hon. Silas Wright. A number of curious and interesting inventions were exhibited, among which was an egg-hatching machine. There was also a churn made to go by clockwork, and a beautiful washing machine for the good housewife, but why was there not a scrubbing machine? There were some splendid carriages from Troy We know that there are good mechanics in Troy; they have been long famous for carriage-building.

There were ploughs and straw-cutters, farming machines, and grinding machines of every description. Mr. Coon, of Lansingburg, exhibited some specimens of his beautiful portable patent fence. We can confidently speak of this excellent invention of Mr. Coon's. There would, no doubt, have been a far greater display at this fair, had it been adjacent to the Hudson River, as a number of heavy machines could not be taken so far from the principle line of navigation.

Accident at Wilkinsonville.

John W Gamble, the overseer of the carding machinery in the Wilkinsonville, Mass., Factory, was instantly killed last Wednesday evening. In moving the machinery from one room to another, two tackles were used, the rope attached to the end where Mr. G. stood parted, and the whole weight of the machinery appeared to fall upon him. He did not speak after the accident.

Emigrants.

It was recently stated in Parliament, that 670,000 persons had left the United Kingdom for America during the last ten years. Last year alone 110,000 sought a home in our land, and it is calculated that 300,000 will come to America this year.

Iron.

We learn that a mine of iron Ore has been discovered on the farm of Anthony Tranuse, in Durham township, Pa., and that it is apparently inexhaustible, and of the very best quality. Mr. Transue has leased it to a company, who will immediately proceed to work it with effective force.

Rail Road Receipts.

The receipts of the first week of this month on the Western Railroad, exceed those of any of its predecessors—amounting to $33,242, being an increase of $7000 over the corresponding week last year.

Mechanics' Mutual Protection.

At a regular meeting of Mechanics' Mutual Protection No. 5, of New York, held on the evening of the 21st inst., the following preamble and resolutions were adopted unanimously.

"We have heard that the hand of death has been laid upon our well-beloved brother William Giffen. He died suddenly on the 8th inst., of yellow fever, in the city of New Orleans. The news of this sad event fills our hearts with profound grief, for our deceased brother was one of our first officers, and to his zeal and labors in the cause of the Mechanics' Mutual Protection we are mainly indebted for the establishment of the order in this city.

"Therefore resolved, That we deeply sympathize with his afflicted parents, with his frtends and relatives, and with his esteemed brother-in-law, our worthy Grand Protector, Peter B. Leddy, and while they mourn a son and brother cut off in the noon-day of life, at the early age of 23 years, with such bright hopes before him in business, we also mourn for him as a brother of our Order, and as a Member of this Protection.

"Resolved, That as his death warns us of the shortness of life—that there is but a step between us and the grave—we shall, in memory of his stern honesty and worth, attire our Hall and the emblems of our Order, in mourning for the term of three months.

"Resolved, that a copy of these resolutions be sent to his father, William Giffen, No 20 Norton street, Albany, and published this week in the Scientific American and Mechanic's Journal."

SMITH MEAD, R. S., 275 Bowery.

We have known William Giffen since he was a boy. and we were in company with his father a few weeks ago, to see the shipment of tools from this city for him to commence business. A few days ago we saw a letter from him, wherein he spoke hopefully of the future, but now, alas, he slumbers with the clods of the valley.

On the same evening that the above resolutions were adopted, the ladies of the 17th Ward presented No 5 with a most splendid floral wreath, wrought into the Mechanic's emblems. The Mechanic's Mutual Protection is fast gaining favor among all classes. We are informed that they are beginning to exhibit much energy in Albany and Watertown, and other places. They have done well in this city this quarter.

R. MACFARLANE, P. G. S.

Great Wheat Yield.

Mr Duncan McVean of Wheatland, Genesee county in this State, harvested 250 bushels of wheat from *four* acres of land, the past harvest. The wheat was of the Soule's variety. If any other town can beat this we should like to chronicle it.

State Prison Labor.

The employing and employed mechanics are making active war upon the employments of convicts, in the county penitentiary, in shoe making, and other business, at rates which defeat the fair competition of trade, and to take legal means to prevent it.

Financial Strategy.

The Philadelphia Pennsylvanian tells a story of a speculator who has a great habit of riding in omnibusses, and who always hands up the change from passengers who sit betwixt him and the door. It seems that he buys up tickets by the quantity at four and a half cents a piece, and when a sixpenny bit is handed him for the fair of a passenger he pockets the cash and gives the driver one of his tickets instead, by which he makes a clear profit of thirty-three and one third per cent. This is as good a stratagem as any practiced in Wall street.

The U. S. revenue cutter McLane, which was built by the Government about two years since at an expense of $180,000, is advertised to be sold at auction in New Orleans, she having proved unfit for sailing or for steaming.

Mrs. Hall says:—"The ugly and the handsome are sent into the world together, and if the Lord gives a share of the universe to both of them, sure we have no right to take it from them."

Mechanical Drawings.

We were shown a specimen of drawing executed by Mr. Frederick Cook, of No. 188 First Avenue, a few days since, which we think, excells anything of the kind we have ever seen. The drawing represents a low pressure engine, both in perspective and sectional, and not only exhibits perfectly all the important parts of an engine, but also, the minor parts, even to every screw. Mr. Cook is a young artist, but evidently of much talent, and we wish him all the success his genius merits. We understand that Messrs. Lewis and Brown of 272 Pearl street, are making arrangements to publish an engraving of this superb drawing, which will be ready for sale about the first of November.

A Giant Race.

A jaw of a human being found in one of the mounds near Watertown, N. Y., is said to be of a size for a man no less than twelve feet high. It may yet be discovered that it is no human bone at all.

Hats! Hats! Hats!

Knox, of 128 Fulton street, has introduced his autumn style of these indispensible articles, and is now ready, with hat in hand, to supply *all*, from those the most fastidious to those less particular, with a better hat for a corresponding price than any dealer in the city. Give him a call, and if you are not satisfied that such is the fact stop at our office and you shall be recompensed for your trouble of calling.

Treasure Recovered.

$25,000 in specie has been fished up by means of the diving bell, from the sunken steamer Tennessee, in the Mississippi.

Rather Costly.

The French steamship company has given $1000 to Mr. Morrey, whose legs were broken by the steamer New York running into the wharf; the bark against which she run claims $3000 and her damages and expenses in all will be about 6 or $7000.

Obstructing the L. I. Rail Road.

Two men named Hawkins and Durtin were arrested on Friday at Southwold, L. I. charged with putting obstructions on the Long Island Railroad.

Arrival of Immigrants.

The number of immigrant passenengers arrived at this port during Friday. Saturday and Sunday last, amounted to 2,863. 980 arrived yesterday.

Venerable Chairs.

The arm chairs of the rooms of the Aldermen and Assistants that were in use by the first Congress of the U. S., are to be placed in the Governor's room

Teachers' Advocate.

This valuable paper nas been removed from Syracuse to this City, Office No. 103 Fulton Street.

Coal has been discovered in Warren county New Jersey, near Hope. A heavy flood laid bare the mineral, and there is every indication that the bed is extensive

A bridge about twenty miles this side of Richmond, which cost nearly $15,000 was recently set on fire by an incendiary, and entirely destroyed.

The heart of a man is said to weigh about 9 ounces; that of a woman 8. As age increases, a man's heart grows heavier; and a woman's lighter, after she is thirty.

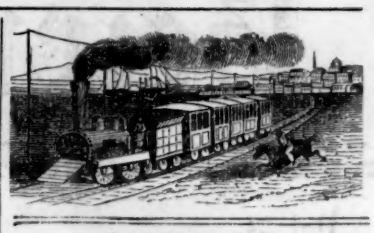
An American merchant at the Cape of Good Hope, has sold a hundred thousand Yankee ploughs, chiefly to the Dutch for the use of their vineyards.

Col. Wilson, who recently died of yellow fever at Vera Cruz, willed $40,000 to be applied to the support of the poor in Edgecomb county, North Carolina.

Thirty barrels of rice, of the new crop have been received at Savannah. The harvesting has now fairly commenced.

The Niagara last Friday brough 960 passengers from Albany to this city.

There are 27,000 daughters of Temperance in the United States.



FOREIGN NEWS.

The steam-ship Brittania, from Liverpool, arrived in Boston last Saturday, and by our English exchanges we learn that the mammoth steamer Great Britain has been successfully lifted from her position in Dundrum Bay, and has been safely brought over to Liverpool. It appears that she has sustained very little injury. She must be most substantially built. The whole affair reflects great credit upon the scientific abilities of the engineers appointed to remove her.

By our foreign correspondence we have been informed of a wonderful feat performed by an American sailor in the river Clyde, Scotland, an account of which will appear in our next number.

There were a great number of large failures throughout Great Britain and Ireland, mostly among those who speculated in breadstuffs. Trade was not very brisk and money was scarce. The manufacturers attribute the scarcity of money to the great amount drained from the manufacturing to the railway interest This, however, cannot be the true cause, as more money was paid out for railroads in 1845-6 than is paid at the present time. The steamer Britannia came near being wrecked in a fog on the coast of Newfoundland. She is now in this city, having come from Boston to be repaired here.

FROM MEXICO.

Four thousand troops from the Army of Gen. Taylor have to be withdrawn to reinforce Gen. Scott. It is generally supposed that Mr. Trist, not Gen. Scott, was the cause of the armistice. It is certainly a singular fact that our army is encamped within a few miles of the city of Mexico, that our soldiers behold every morning its spires glittering in the sun, and hear the bells of the cathedrals tolling the hours for vesper service, yet are prevented after victory from marching a step further. We should indeed be glad to hear of a peace concluded, a peace honorable to both nations, but this is impossible.

Col. Fremont has demanded a speedy court martial on charges preferred against him by Gen. Kearney.

The mutiny in the North Carolina regiment has been effectually quelled.

Dr. Milligan says, "in regard to the color of the hair and the complexion in insanity this sad affliction is more rare in individuals with red hair. Out of upwards of 1100 lunatics under my care, I could not count more than about twenty whose hair was distinctly what is vulgarly called 'carrotty."

A powder-mill, on Laurel Run, about two miles east of the borough of Wilkesbarre, Pa., was shattered by an explosion on Thursday afternoon last. One man, named Charles Kinney, was so badly burned that he died the next morning. Another man was injured, but it was believed he would recover. This mill had just been started by Parish & Knapp.

Our prairies says the Racine Whig, are literally alive with Prairie Chickens this season and sportsmen are having a fine time in hunting them. Two of our citizens were out a day or two since and bagged fifty in about two hours.

They talk about commencing an extensive cotton factory in Washington city. The *Delta* says—"We know of no better location for one. The members of Congress will supply the *yarns*."

The President has appointed John McPherson, Esq., Consul for Genoa, in the place of Mr. Lester, who has been recalled, it is stated at the request of the Sardinian Government.

There was a severe frost in portions of Massachusetts several mornings last week doing damage to the growing corn.

Inertia.

Inertia is that property which renders all bodies capable of retaining their present state or relation, whether at rest or in motion. By this property all bodies at rest continue at rest until put in motion by the exertion of some external force; and if in motion, they always continue in motion until interrupted by external force. This property of matter may be illustrated by such examples as the following:—

A marble shot from the finger will move but a small distance on a carpet; it will move much farther on a flat pavement, and farther still on smooth ice Here the friction is greatest on the carpet and least on the ice. If the friction were quite removed, and the resistance of the air also, the marble, once put put in motion would continue in that state forever.

If a ball be fired from a cannon with a certain velocity, and there was no resistance from the air, it would continue round the earth perpetually, and never come to a state of rest. In this manner the moon goes round the earth although she is as inactive as a stone.

If a person be standing in a boat at rest, and the boat be suddenly pushed from the shore, he will be in danger of falling backwards; and if the boat in swift motion, be stopped before he is aware, he will fall forwards: because his tendency will be to continue in the same state of motion.

Attraction and Repulsion.

The power of attraction and repulsion is as well explained by the following curious experiment made with the gall of animals upon the water, as by any other method:

Take a bright blue substance such as a marine blue, which will be visible when spread to a great extent; mix it with the gall and drop it on water. The gall possesses so much of the repulsive power when falling upon the water, that its particles are separated from each other to such a degree, that one drop of the gall may be made to extend over a surface of two feet of the water, on all sides forming a complete circle. When the drops of colored gall fall upon the water, it is separated with much force, and its particles are thrown asunder with considerable velocity, which again appear to be retained within a circumscribed boundary by attraction, which causes them to form a regular circle. If another drop of gall, colored with bright red of carmine be dropped at the centre of the blue circle, it will not only spread in the manner of the former, but also carry the blue with it; making a red circle with a blue border. This experiment may be repeated with differently colored drops. The colors must be mixed in very small quantities so that the gravity of the gall will be but slightly affected.

The Fortifications of Paris.

When the forts around Paris are completed they will require. in time of peace, an army of 24,800 men, forming with the garrison of the city proper an effective force of 60,000 infantry, cavalry and artillery, with 1,262 cannon, 80 mortars, &c., exclusive of the National Guard. The population of Paris, with the suburbs, is 980,000, besides 70,000 foreigners, 25,000 of whom are English.

A Windfall.

The Philadelphia Bulletin is informed that a young mechanic of that city, is about to sail for England, intelligence having been received by him that he is heir to property in that country valued at $75,000. He has been employed for several years in one of the foundries in the suburbs of Philadelphia.

American Grain.

It is supposed that 37 or 38 millions bushels of grain were sent from the United States to Great Britain from the 1st of September, 1846, to the early part of last month. This was worth, at a fair average, about forty-five millions of dollars.

Definition—Apothecaries.

The Salem Observer gives the following—A *dividend* is the surplus, the remainder, result, *end*, of a transaction divided amongst the shareholders—hence the words *divide ends*. An *Apothecary* originally carried his medicine about in Jars—he was a pot carrier—and from thence came the word *A pot he caries*.

Artesian Wells.

Modern science has demonstrated that no city need want pure water. In large cities shallow wells cannot be depended upon for purity, because there are so many things soaking into them to make them impure. A series of experiments have recently been made at East Boston, with a view of procuring water from the profound depths of the earth for supplying the inhabitants of that part of the city with this necessary element.

The Boston Cultivator says upon this subject, that although many petty misfortunes have attended the experiments, above alluded to, yet no fact is better established than the capacity of Artesian Wells to yield water in a never failing volume, proportioned to their depth and diameter. Geology has made the grand discovery and the crust of the globe is so constructed, that water percolates to a vast distance into the interior between the strata of different materials—and when the lowest points have been penetrated, the pressure of the atmosphere upon the surface, where the permeable strata crosses out, forces the water up through the shaft to a level with the basin that contains it. These bowls for the upper strata actually represent a series of vessels fitted into each other like a nest of them in a crockery store, having their interstices always filled with water—and an Artesian well is made by tapping one of them, by boring through those above—the tube excluding all the fluid but that arising from the lowest. Now it is as plain as the way to market that the water can be had in inconceivable measure either at East Boston or South Boston, or anywhere else by sinking the shaft to the place where it is lodged. The construction of the earth is the same in all temperate zones. Wherever Providence designed that animal life should be sustained, there the mighty water tanks were sunk, at prodigious depths to be sure, but there they are, and the never failing sources of perennial springs. Little rills, are only an overflowing of their margins, which ultimately traverse the country, enlarging as they go till lost in the ocean from whence they had their origin.

Evidence of the complete success of these Artesian Wells abound in all civilized Europe and New England—Boston proper has quite a number of them, and although the water is never failing on some of the wharves, still it is believed that they are too superficial; had they been bored five times their present depth the water would have forced its way many feet above the surface.

One of the curious developements of the incomplete experiments at East Boston thus far, is this, viz. that the shaft will actually supply 3000 gallons of water per day, by pumping, which is equal to 60 gallons a day for fifty families. Even by multiplying these shafts it would not be perverse economy, if all farther action is to be given over in respect to a thoroughly constructed Artesian well.

Cadmus.

He laid the foundation of Thebes, and was the first who introduced letters into Greece. His alphabet consisted of only sixteen letters, to which eight more were afterwards added. His era is reckoned to be 1519 years B.C.

The Man, not the Station.

It is said the father of Montgomery, the poet and preacher, was at one time the clown of the ring at the circus in Bath. He gave his son a good education, and instilled into his mind religious truths. Mr. Montgomery is now the most popular divine in London.

A Quiet Answer.

Say our exchanges, generally, "When a man writes against secret societies over an anonymous signature, his practice refutes his theory."

The New Arsenal.

A splendid new State Arsenal is building in this City under the superintendance of the Commissary General, J. Storms.

Salt Trade in Russia.

The produce from the monopoly of salt in the year 1842 fell off to the extent of $500,000 as the duty per ton was reduced from $15 to 12. But the consumption has so increased, that in the course of the last three years the receipts have increased to the extent of 676,900 rix. dols.

Improvements on the Steam Engine.

Mr. J. Aitken, of London, has taken out letters patent for an important improvement in the steam engine, by constructing what he calls an atmospheric cylinder placed either over the air pump, or in any other convenient situation which may be fixed upon, with the view of easing the load on the latter, which is serious in all engines. Through this atmospheric cylinder all the condensing water passes on its way to the condenser; atmospheric pressure is thus given to the piston, and the load of the air pump counteracted The action of the air pump abstracts a considerable portion of the power of every description of condensing engine during the space the load is on; but in direct action, or pumping engines particularly, where there is no fly wheel to equalise the load, the advantage of the atmospheric cylinder will be great; for steam, equal to the load of the engine, and of the air pump, must be supplied from the beginning to the end of the stroke. Supposing the air pump to be 34 inches in diameter, the pressure on the piston would be 12,700 pounds at each stroke. The inventor estimates, that the use of the atmospheric cylinder will give power to that extent; and the check of the air pump being counteracted, the engine will work more steadily and more safely. Another advantage of this additional cylinder is, that it extracts the air from the water on its way to the condenser, before it becomes expanded by the heat of the steam; and the lowest benefit observed from this cause, was an improved vacuum in the condenser to the extent of three quarters of an inch of mercury. A greatly increased quantity of water may be admitted to the condenser without inconvenience to the engine, the atmospheric cylinder giving power to discharge it from the air pump in proportion to the quantity passing through it.—The principal advantages arising from the application of the new cylinder are estimated as follows, viz. 1 The steam cylinder is relieved of the load of the air pump. 2. The vacuum of the condenser is greatly improved. 3. The movement of the fly wheel, or the momentum of a steamboat, is rendered much more steady, on account of the resistance of the air pump at each revolution, being counteracted by the atmospheric cylinder. 4. In cases where the condensing water can be brought in a pipe from a height, the power of the engine may be increased in proportion.—5. It will obviate the difficulty sometimes experienced when the condenser is too hot to supply itself with water, and, 6. In marine engines there will be great advantage from the supply of condensing water, being in exact proportion to the speed of the engine. The entire gain upon the average, from the application of the new cylinder, is estimated at 22½ per cent.

The Great Tower of Westminster.

This enormous structure, in the lower part of which the queen's state carriage and eight horses will be driven, is eighty feet square, and to the top of the octagon turret with which each of its four angles will be furnished will be three hundred and forty-six feet high, or little less than the height of the top of the cross which surmounts St. Pauls Cathedral. The faces of the tower will be elaborately panelled and ornamented, and will include two ridges of triple windows. The piers of the tower will be adorned, within the porch, with gigantic statues on bracket pedestals.

Clerical Wit.

"I fear," said a country curate to his flock, "when I explained to you, in my last charity sermon, that philanthropy was the love of our species, you must have misunderstood me to say *specie*, which may account for the smallness of the collection. You will prove, I hope by your present contribution, that you are no longer laboring under the same mistake."

Legal Wit.

A lawer once wrote "rascal" in the hat of a lawyer, who, on discovering it, entered a complaint in open court against the trespasser, who, he said, had not only taken his hat, but had written his own name in it.

A coquette is said to be a perfect incarnation of Cupid—she keeps her beau in a quiver.

Blessed are the Merciful.

A correspodent of a city paper says on stepping on board a steamboat at one of our docks the other day he noticed a poor soldier, who was in altercation with a drayman, about the transportation of his baggage from a distant part of the city. The soldier who appeared very ill, was returning from the field of war, to die probably with his friends; and the unjust drayman was trying to extort about four times what the law would allow him. No one however, seemed to interfere, unless to make some impertinent remark highly injurious to the feelings of the unfortunate invalid; and he soon yielded to the unjust demand, sinking down into a seat with a look of anguish that spoke volumes. A lady observing the transaction, immediately walking up, accosted the soldier with "My dear sir, it was a great imposition no doubt, but you seem unusually afflicted with so small a circumstance." "I would not be, madam," said the man, "were it not encroaching so far on my means as to compel me to be a deck passenger, with no place to sleep, and I can scarce sit up now." "Take my ticket, sir," said the lady, "and God bless you, poor soldier," when putting the ticket into his hand, she was out of sight in a moment. We saw her however a few moments after conversing with a female friend in another part of the boat. "Now tell them," she said, "I will come next trip." I must return and get money for another outfit. "But," said the other lady, "why don't you tell the captain, and"—"Tell the captain!" said the lady, with a bitter laugh, "why I have seen poor people thrust on shore many times because they lacked a few shillings of their fare, and I once saw a poor widow and her children put out of a car on a strange road, because she only wanted a dollar, to take her back to her own town. No, I can this time serve a fellow being at a small inconvenience, and I bless God I have the means of making this poor soldier comfortable. Good bye!"

Dogs.

The Austrian dog never barks: indeed, it is remarked by Mr. Gardiner, in a work entitled "The Music of Nature," that "dogs in a state of nature never bark; they simply whine, howl, and growl; this explosive noise is only found among those which are domesticated." Somini speaks of the shepherds' dogs in the wilds of Egypt as not having this faculty, and Columbus found the dogs which he had previously carried to America to have lost their propensity for barking. The barking of a dog is an acquired faculty—an effort to speak—which he derives from his association with man.

Delicate Compliment.

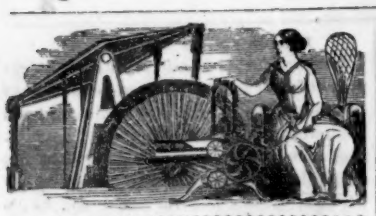
A young lady being addressed by a gentleman much older than herself, observed to him the only objection she had to a union with him was a probability of his dying before her and leaving her to feel the sorrows of widowhood. To which he made the following ingenious and complimentary reply: "Blessed is the man that has a virtuous wife, for the number of his days shall be doubled."

A Tall one.

Nathan Lampman, of Coxackie, New York, who is now 16 years of age, and seven feet one inch in height, bids fair to become a man of *higher standing* in the world than any man now living, having grown nine inches during the past year, and on the usual rules of growth, will probably reach at least one foot more. He weighs 102 lbs.

"Bring me the spider," said a lady who was trying to teach the art of cooking to a newly imported servant girl. "Bring me the spider, Biddy." "The what, marm?" enquired Biddy, with great astonishment. "Why the spider," replied the mistress of the house. "The spidher, is it!—och holy Moses, and de ye ate spidhers in this country? och what barbarians!"

A newly elected volunteer officer was asked by Gen. Brooks if he was qualifying himself to command, by learning his exercises from a competent instructor. He told them there was no occasion to undergo that trouble and expense, as he had purchased two pair of *drill pantaloons*.



New Inventions.

Electric Railway.

Mr. Lilly and Dr. Colton, of Pittsburg, Pa., have invented a new method of railway propulsion, which is both novel and ingenious. The machine is a small locomotive and is placed upon a circular railway, around which it is driven by electricity. The power is applied, not to the locomotive, but to the *track*, in a very curious manner. Two currents of electricity, negative and positive, are applied to the rails and by them communicate to the engine. The latter is provided with two magnets, which, by a process of alternate attraction and repulsion, drive the car over the track. A piece of lead is placed on the locomotive, making in all a weight of ten pounds, and on the application of the battery, the machine moved with astonishing rapidity up a plane inclined about five degrees. Heretofore the propelling power had been used on the car itself—in this instance, however, the power is placed on the rails, and an engineer might remain in one town, and with his battery send a locomotive and train to any distance required.

Improved Sofa.

Mr. W. O. Stone, of Charlestown, Mass., has made an important improvement on bed sofas. His new sofa is as soft and easy as a feather bed to sleep on, and as comfortable.—We are informed that the improvement can be applied to sofas of every style, and greatly improves the appearance of the most common sofa and does not cost more than three or four dollars extra. The inventor has taken measures to secure a patent. We shall be able to give a description in some future number, with an engraving of this beautiful invention.

Patent Weather Strips.

Mr. Matthewson, of Boston, has a very useful invention for the purpose of excluding dust and cold air from houses and stores. The "patent weather strips" are secured to the bottom of the door, and act with a spring in such a manner that when the door is closed the strip presses firmly to the door sill, and thereby accomplishes perfectly the design of the inventor. Much fuel, and a deal of trouble, from dust, &c. may be saved by the application of one of these ornamental as well as useful articles. Mr. George Chase, Haverhill street, Boston, is the agent for that city.

New Envelope Machine.

Mr. H. W. Chamberlain, of Dalton, Mass., has invented a new machine for making letter envelopes which will no doubt be of great benefit to the public and we trust to himself, as all such inventions should be. It is constructed to take the paper off the rolls, make it into the envelopes and fold them ready for packing. Letter envelopes are now extensively used and their use increasing. A patent was lately taken out in England for an envelope machine, but it was a very inferior invention to the plan proposed by Mr. Chamberlain.

Schnebley's Steam Engine.

A new rotary engine, of 25 horse power, has been exhibiting in this city at the machine shop of Dunham & Browning. It is worked by two pistons inside of a cylinder, and saves about 25 per cent in space and weight. The inventors of this engine are two brothers, W. & T. Schnebley of Hagerstown, Md. They have devoted ten years to this object.

New Joiner's Clamp.

Mr. Edward H. Bunnell, of Syracuse, has invented a new clamp for Joiners and Carpenters, entirely different from those now in use. It is very simple and must ultimately supersede the screw clamp entirely.

Rivet Machine.

Mr. Samuel Long, of Sandwich Mass., has recently invented a machine for making rivets. It is in operation in Pocasset; is worked by water power, and turns out rivets at the rate of eighty per minute

Piston Packing for Pumps.

A number of valuable improvements have been made from time to time it the packing of Pistons. First we have Snodgrass's metallic packing, and then Ward's leather packing to supersede the common gasken. The following engravings represent an improvement lately made in the packing of pumps, &c. &c., which has been highly recommended and praised.

Fig. 1.

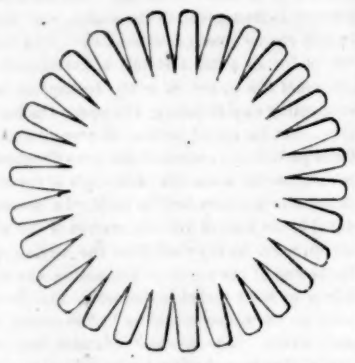


Fig. 1, is a metallic disc, (brass is generally preferred, as being sufficiently elastic without liability to rust,) notched all round so as to admit of being bent up in the form of a crown, as shown in fig. 2.

Fig 2.

A better idea, however, of this invention will be derived from a sectional view, which will show how these springs operate.

Fig. 3.

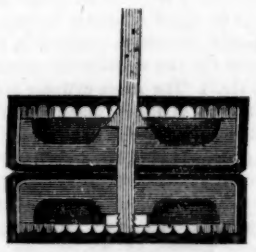


Fig. 3 is a sectional view of a piston for a force pump, with its appendages. The two piston plates will be observed, between which the springs, fig. 2, are inserted with ordinary cupped leathers. The outward pressure of these springs operates to keep the edges of the leathern cups in close contact with the working barrel at all times, effectually counteracting the natural tendency of the leather to shrink, and withdraw when dry. This construction of piston also insures a constantly water-tight joint without the necessity for tight packing, always objectionable on account of the loss of power it entails, as well as its injurious action on the pump barrel, especially in situations where particles of sand or gravel are liable to be raised with the water. The plunger pumps fitted in this manner, are proof against injury from any such matters, and form the nearest approach to a frictionless pump.

New Telegraph Posts.

Mr. O'Riley, in the construction of the Western Telegraph lines has a new invention for connecting the wires with the posts, it is of cast-iron, constructed in such a way as to be separated into parts for convenience in attaching the wires. A bolt passess through the top of the post, to which it is secured by a key. Underneath the iron cap is a glass insulator through which the wire passes. An improvement upon the old invention for the same purpose. They are to be used on the St. Louis line. Two companies are now engaged upon it, one between Chicago and Michigan City, another in the direction of Lafayette.

Galvanized Spring Mattrass.

Mr. Ambrose, of Congress street, Brooklyn, has invented a new kind of mattrass, which is highly recommended for invalids, as being so uniform in its pressure upon every part of the body. It is supported by spiral springs which keep it always elastic, and upon the least motion allows a current of air to pass through it.

New Spiral Bolt.

Mr. W. T. Steiger, of the General Land Office at Washington city, has invented a spiral bolt, for which he has obtained a patent, and which is likely to become very useful. It consists of a spiral spike to be used in every description of frame work, but more particularly in building ships and other marine structures. The invention is remarkable for simplicity, and in the opinion of competent judges, highly important in imparting strength and durability to such objects as require the use of bolts or spikes in their construction. These bolts are made by simply reducing bars of copper or iron of a square, triangular, or any other polygonal section, to a regular spiral form, by twisting them, or by any other convenient means, by which the angles become the thread of a screw; afterwards, they are cut into lengths and formed into bolts of various sizes, either with or without necks and heads. Where the timbers to be secured lie in contact, they require no head at all, the upper timber being held down by the spiral threads.

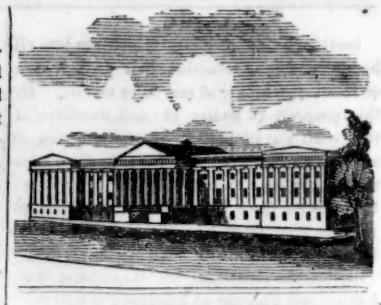
The points are made by setting down the spiral with half-round swedges to a cylinder or cone: and the front edges of the threads, being sharpened by filing or any other means, become a regular tool for making the incision in the wood. They are driven, like other bolts, with a hammer or maul, after boring a hole, and cut their thread in the hardest seasoned live-oak in the most perfect manner, entering it with a rotary motion; and have when in place, all the grip or tenacity of screws. The expense of making them, it is estimated, will be no more than the common round bolts for the reason that all the fibres within the diameter of the bolt are cut transversely, by which the lateral pressure is avoided, and by the operation of making them a spiral arrangement is given to the fibres, imparting toughness to the iron, and every inch of the bar is tested, so that the hidden flaws, if any exist, are detected and exposed. They are easily backed out by punching against their points, and admit of being protected from corrosion by the application of resinous substances in a fluid state, injected laterally into the capillary tubes or grain of the wood.

These bolts have lately been subjected to some experiments at the Washington Navy Yard, and the results were satisfactory. It is said that they are adapted to the construction of gun carriages, cars and other wooden structures Arrangements have recently been made for giving them a trial on a large steamboat of 1100 tons burthen, now being built by Messrs. Simpson & Co. of this city. The invention has been approved of by a number of experienced and scientific men, among them Col. J. J. Abert, of the corps of Topographical Engineers.

Kirk's Improved Steam Hammer.

Three of Mr. Lewis Kirk's Steam Hammers have been erected at the Redding, Pa., Rail Road machine shop. For simplicity and beauty of operation they have been highly eulogised by the Schuylkill Journal. The hammer can be made of any desirable weight, from fifty pounds to ten tons, and is consequently applicable to all kinds of forges and rolling mills—especially that class engaged in the manufacture of boiler iron, the quality of which is so much improved by the heavy hammer upon the piles, and machine and engine shops.—Besides drawing iron into any desireable form it is good to work up all the off-falls and the scraps: thus converting a comparatively useless article into the most valuable. The heaviest of the hammers now used strikes one hundred blows per minute, and the light ones from one hundred and fifty to two hundred—and the attendant has perfect command over both the upward and downward motion of the hammer, controlling with the utmost ease and precision the softness or intensity of each blow, from the most powerful stroke down to the gentlest tap. Mr. K. is drawing crank and car axles, and the different kinds and shapes of iron used at the company's establishment.

The steam cylinder is vertical, with the upper end open, and the steam piston is applied direct to the under side of the helve, and the anvil seat being separate from the steam cylinder bed, there can be no jar to disturb the joints.



LIST OF PATENTS

ISSUED FROM THE UNITED STATES PATENT OFFICE,

For the week ending Sept. 18th, 1847.

To Morris Levett and Henry Davis, of New York, for improvement in coloring the plates for artificial teeth, (said Davis having assigned his right to said Levett.) Patented September 18, 1847.

To Joseph Battin, of Philadelphia, Penn., for improvement in hydrostatic stops for gas pipes. Patented Sept. 18, 1847.

To James McGregor, of Wilton, New York, for improvement in Cooking Stoves. Patented Sept. 18, 1847.

To Samuel F. Gassaway, of Marietta, Georgia, for improvement in Bridges. Patented Sept. 18, 1847.

To Joseph Pierce, of Buffalo, New York, for improvement in Grinding Mills. Patented Sept. 18, 1847.

To James Albro, jr. of Elizabethtown, New Jersey, for improvement in printing oil cloth carpeting. Patented Sept. 18, 1847.

To Joseph Battin, of Philadelphia, Penn., for improvement in Gas Regulators. Patented Sept. 18, 1847.

To Alfred C. Jones, of New Orleans, La., for improvement in portable machinery for planing metal. Patented Sept. 18, 1847.

Railway Brake.

A gentleman named Lee, has invented a railway Brake, which has been tried on the Croyden Railroad, England, and a train of 19 cars descending an incline at a velocity of 35 miles an hour, was, by brakes to one carriage only, brought to a dead stand within 55 yards. Brakes to one carriage in nine are considered to be the requisite average. It provides for two classes of danger: for unexpected concussion, a buffer projects from the carriage or engine, and any force coming in contact with it lets down a drag or break upon the rail, which immediately stops the carriage. Although perhaps this contrivance would not at once stop the whole train, and with a buffer to each carriage that might almost be accomplished, it would prevent the occurrence of what is most to be feared in cases of concussion—that is, the dreadful effects caused by the meeting of two opposite, the progressive and the arresting forces, by which the carriages in the centre of a train are frequently heaved up or completely crushed. In the other case, that of forseen danger, the conductor of the train can by turning a handle, almost immediately arrest its course.

Improvement of Wet Land.

The Mark Lane Express gives an account of the improvements made on the farm of Lord Stairs, in Wigtonshire. One part was drained, subsoiled, limed, and thoroughly pulverised, and then produced forty bushels of wheat to the acre, where only twelve were raised before; and carrots, turnips, and mangel-wurtzel on the land averaged twenty-three tons to the acre. A morass, a part of which had been cut over for peat, for thirty years, was drained, pared, burned limed, manured, and sown to oats. Crop, forty bushels to the acre. Next year top-dressed with gravel and sand, limed, manured, ploughed, and two acres sowed to turnips, Dale's Hybrid; some of them weighed fifteen pounds each. The crop was forty tons per Scotch acre. [Four Scotch are five English.] Seven acres planted to potatoes produced five hundred and seventy-six bushels per acre. Previous to improvement, sixteen acres of this land was barely sufficient to pasture two cows and their calves.

India Rubber Saddles.

India rubber is now use for saddles—to which its elasticity, durability and other qualities peculiarly adapts it.

NEW YORK, SEPTEMBER 25, 1847.

Volume III.

Our readers will perceive that we have made our toilet and appeared in a new holiday suit, and no doubt old friends will be walking up to give us a hearty shake of the *friendly hand*, and say, as Ben Franklin's excellent wife said to that philosopher on presenting him with a shining new goblet, " why my Benny, you deserve it." We cannot say that a partiality for tawdry finery is ours, we like the plain and neat, and have chosen a modest garb as being the most suitable for those whose labors are the *severe* and practical.—Our future efforts will be as faithfully devoted to the cause of science and art as our past have been. It will always be our aim to communicate information in such a manner, as will tend to impress the mind with ennobling sentiments as well as with useful information. The Scientific American will still combine in a condensed form the interesting and useful weekly news, and as it regards receipts and practical domestic economy, we shall always endeavor to remember that our paper is intended to be acceptable and beneficial to the family circle. We have been often indebted for much sound and useful information communicated freely for the benefit of Science.—We expect from our old friends a continuance of their favors, and we shall, as has been our custom, be as ready as heretofore, to give candid advice and desired information. We have always been the friend of the industrious, and for the purpose of elevating the working classes, we shall still be the firm friend and constant advocate of industry, never forgetting that the working man is worthy of his hire, and the inventor of his reward. Impartial truth shall be our guide and a zeal for the still greater extension of true knowledge inspires us to trim our lamp afresh with bright hopes for our third volume.

Reaping Machines.

Within the past few years, a great number of harvesting machines have been invented, seemingly the work of necessity—the mother of invention. Inventions of this kind belong more particularly to the West. The large prairie farms could not be harvested by hand labor, from the scarcity of laborers in these new countries, but above all, the magnitude of the grain fields We in the East can form no conception of their magnitude without beholding them with our own eyes. In Michigan and Illinois it is not uncommon to see 400 acres of wheat in one field.

In Ohio and Illinois they have McCormick's Reaper, which can cut 12 to 14 acres per day with one team and two men, and does this work well. They are made in Cincinnati.—There is another Reaper called Easterly's, which can cut about 15 acres per day, and does well, but needs three horses to work it. The principle of its construction is excellent. There is another Reaper, called Woodward's, which does very well, the apparatus being driven before the team and guided by two wheels and a helm behind There is another Reaper still, called Ayre's Reaper, which has not been so well tried as the others and not so favorably received, yet it may be much improved and do well. There can be no doubt but that agricultural machinery is now engaging more attention than formerly. Our agriculturists are more advanced in the system of organization for the propagation of knowledge than our mechanics, and great good must be the result. Every State has its Agricultural Association, kept up at no little expense, but producing an incalculable amount of good. Our mechanics have no such associations. We hope soon to see them awaking to a true sense of such a system. Our farmers have their State State Agricultural Department. Our mechanics are unknown in any of the State Departments. They ought to have a State Museum, and connected and conducted on the principle recommended by the Hon. Zadoc Pratt, in the United States Senate. There is yet a wide field for improvement, we cannot limit man's inventive powers and there cannot be a doubt but that similar associations for discussing and conversing upon scientific and mechanical as well as agricultural subjects, would produce a vast amount of good. Our farmers, perhaps, above every other class of men, have realised the value of these associations.

The Road to Eminence.

The road to eminence in some of one of the varied pursuits of life open to all, though all do not travel it with equal diligence ; and it is a gratifying contemplation, which every parent has a right to participate in, that some of his family, perhaps now unable to lisp his name, may one day support an ornamented massive pillar of Fame, and be crowned with the honorable title of a benefactor to mankind. A few obscure fishermen reared the stupendous fabric of the Christian Church ; and a collection of apparently little facts, obtained one at a time by various wanderers on the shore of the great ocean of Truth, is the foundation on which rests the colossal Temple of Science. The American Republic, a glorious foreshadowing of man's ultimate destiny —is yet but a flower in the wreath of moral, civil and political beauty which is yet to encircle the globe ; and it will require but the light of a century or two more, to exhibit the diadems of Europe as antique specimens of the past, whose places have been superseded by more rational structures, erected and sustained by more free institutions.

An Important Discovery.

Under the above title, we have seen a long article copied into a great number of papers from Howitt's Journal. The important discovery sets forth that a French chemist, has discovered a fluid to prevent feverous gases spreading, and for destroying poisonous vapors. We have read the article carefully over and doubt not in part the authenticity of the discovery, but we would have been more gratified if after reading such a long article, it had given us some information of the nature of the fluid and the method of using it. If its virtues approach within one twentieth to those attributed to it, surely for the sake of humanity it will not be kept secret.

Iron Rails for Roads.

Several large establishments have recently sprung into existence for manufacturing iron rails. One establishment on the Erie Railroad which has contracted to furnish 12,000 tons for that road. The establishment is now making twenty tons a day, and will soon make forty tons, so that its great contract will be filled in about twelve months. The works are forty-five miles from the junction of the Lacowaxen and Delaware rivers, where the road crosses, and in the centre of the great coal basin of Luzerne county, Pennsylvania, where in fact a foundation cannot be laid but on beds of coal and iron.

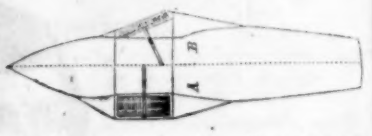
Water Pipes.

The extent of water pipes now laid in the city of Boston is about sixteen miles, of which nearly a mile is pipe of 30 inches in diameter and more than half a mile including the main pipe laid in Washington street is of 24 inches. The greater part of the residue is of 12 and 6 inches. This is exclusive of the small pipes for the supply of houses, which on a considerable portion of the line are inserted in the main pipes, and lead to the side walks, thereby obviating the necessity of again disturbing the pavement, when the water shall be introduced.

Wool in Ohio.

In Springfield, 200,000 pounds of Wool have been sold this season. In Wilmington, Clinton county, 75,000 pounds have been sold. We are glad to find that the attention of farmers has been strongly turned to the growth of Wool. The lands of this State—rich as they are—are found to be admirably adapted to this purpose. The prices of Wool are remunerating, although not at all high. The variety, as well as abundance of agricultural resources, in Ohio, is rapidly making it the richest State in the Union.

Oblique Paddle Wheels.



Much attention has been directed to improvements in propellers, and the shape and position of the wheels have been taken into consideration for obviating the only objectionable feature of the paddle, viz. the dip, which is regulated by the cargo, not the machinery, and the lifting of the water by the paddles —Within the past year, three steamboats have been fitted with oblique wheels in the United States. The Sarah, of Troy, a small boat ; the Iron Witch, of this city, and a large vessel in Philadelphia, name not remembered. The Iron Witch was a failure, but the other two have been very successful, although we believe from other causes than the paddles. The principal objection to the oblique paddle wheel has been, that it would require a much greater breadth at one part of the vessel than the common paddle. But the above cut shews the outline of a vessel, the half A, being fitted with the common paddle, and the half B, with the oblique paddle, by which it will be seen that the breadth of the vessel at the aft extremity of the wheel is not intended to exceed that required by the ordinary paddle.—The wheel, from being so narrow, admits of being supported in a most substantial manner at the inside ; whilst the outside framing would only be necessary to protect it from coming in contact with other vessels.

Whether the oblique paddles are superior to the common paddle wheels or not, experience only will be proof positive, as a hundred propellers have been invented professing to supersede the paddle, which have proved to be but useless contrivances by direct experiment. But as considerable interest has been excited far and near regarding the oblique paddles, we have given the above information for the benefit of the scientific world, to carry out our purpose of keeping our readers apprised of all that is new in mechanics.

Lighting of the Capitol at Washington with Gas.

The principal light will be over the Rotunda. The lamp post is 61 feet 10 inches long ; the lantern is of strong iron work, 6 feet in diameter, with a gilded roof about 7 feet in diameter ; the roof surmounted by a dome shaped like the dome of the Capitol : above that an arrow 6 feet long, and above that again a ball 15 inches in diameter—all gilded ; and the highest part about 16 feet above the top of the pole. The pole is a beautiful piece of white pine, cut on the Susquehannah river. It rests on an iron step ten or fifteen feet below the skylight of the Rotunda. The gas will be conveyed to the lantern by means of wrought iron pipes inserted in the side of the pole.—An extra pipe is inserted for the purpose of lighting the gas in the main tube.

A New Railroad.

M. Audrand, a gentleman in Paris, has made exertions, for the last 7 years, to perfect a system of railroad travelling by means of compressed air, and seems at length in a fair way to succeed. He has laid down a way 100 yards long, upon which a carriage built for the purpose, is impelled, upon his new principle, with an ease and smoothness heretofore not obtained on the ordinary railroads. There is no locomotive necessary to move it, inasmuch as this is accomplished through a tube laid in the centre of the road, with a pipe by its side which keeps the motive power. This system the inventor says is vastly preferable, in all respects, to that of the atmospheric. It combines all its advantages, while it is subject to none of its imperfections. It unites entire safety with the capacity to run 15 to 50 miles per hour. The cost of keeping it in motion is stated to be less than one-half of that of engine propelling carriages.

New Button Factory.

The Springfield Republican says, Hon. Samuel Williston is about to erect a button factory, on a stream east of the village of Easthampton. He also contemplates erecting a first class cotton factory on the same privilege.

A New Mail Carrier.

Much has been said of the sagacity of dogs, and of the many useful services they have been made to perform for man ; but not till lately has the dog entered fairly into the mail service. A gentleman a short distance from Baltimore very fond of having the current news of the day, but for a long time he found it somewhat difficult to gratify his inclination in this respect. He has, however, hit upon the following expedient, by which he obtains his desires :—A steamboat, which leaves Baltimore several times during each week, passes along the river within about a mile of the shore on which his residence is situated. At a given signal his dog plunges into the water and makes his way rapidly to the boat ; as he nears it a bladder, containing the daily papers of the city, is thrown out, which the dog immediately seizes, and with a faithfulness and despatch which would serve as an example to many of the government mail agents, makes his way back to the shore and deposits his mail bag at his master's feet. So well accustomed has the dog become to this service that when the mail fails, and no bag is thrown to him from the boat, he shows an evident disappointment and unwillingness to return without it.

Curious Rail Road Accident.

On Saturday evening, as the New York steamboat train was entering Worcester, and shooting into the Depot of the Norwich Rail Road the axle of the forward car gave way. The locomotive ahead went into the proper depot, but the falling of the broken axle displaced the switch, and the remainder of the train went pell mell into and through the engine house, displacing in its course a locomotive and overturning a small building. No one was in the least injured, though the passengers was somewhat rudely jostled together. The freedom from injury was owing solely, to the fact that the passengers were, very wisely, all in their proper places.

Dr. Bowditch.

Dr. Bowditch, the great mathematician, and translator of La Place's Mechanique Celeste, forms one of the brightest examples for American youth to imitate. He was self-made, self educated—his poverty being such in early life that he could not avail himself of what he so much desired, a classical education. Yet so great were his attainments by industry that old Harvard University conferred on him in his career the degree of M.A. Of this he is said to have been exceedingly proud, and would often revert to that day. Though he afterwards received the title of L.L.D., yet he was the most delighted with his M.A.

Volumescope.

Some time ago Professor Hare invented an instrument purporting to be particularly for the analysis of atmospheric air. But what is the reason we hear no more of his instruments? Do they not answer their design. or are they not recommended by the savans of other lands.

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Water.

R in water, beside containing gases in solution, becomes impregnated with many saline substances in its passage through the ground; and hence the water of springs and rivers always contains many ingredients. The purest spring water is that which has passed through gravelly deposits, such as of granite, sandstone, quartz; because the component parts of those stony substances being insoluble, the water cannot take up much of them. In the same way the water of old wells is purer than that of new, because the long continued action of the water has removed or gradually dissolved the soluble matters in the same passages through the ground to the well. "The matters generally contained in spring, well, and river water," "are carbonate of lime, sulphate of lime, muriate of lime, sulphates of potash and soda, muriate of soda, and sometimes a little magnesia. 'In rain water,' 'the muriates generally form the chief impregnation, while in spring-water the sulphates and carbonates are predominant, and in the former the alkalies,' potash and soda, 'are in larger quantity, while the earths, particularly lime, are more abundant in the latter.'" It is in its combination with one or more of these salts that water becomes *hard*, chiefly with the sulphate of lime or gypsum, and the carbonate of lime or limestone. Water is said to be hard when it will not dissolve but decompose soap. *Soft* water, on the other hand does not decompose, but combines easily with soap and dissolves it. Hard water is not so fit as soft for many culinary purposes, such as making tea, and boiling vegetables. It is, therefore of importance for you to know when water is in a hard or soft state. By placing a few thin slices of white soap in a clean tumbler of the water to be examined, its *hardness* will be indicated by *white flakes* or *curdy particles around the soap*, the effect of decomposition—the acids of the salts in the water combining with the alkali of the soap and leaving the fatty matter. A very small quantity of either of the salts enumerated above will render water hard. Water can dissolve 1-500 part of its weight of gypsum; but according to Dr. Dalton, 1-1000 part is sufficient to render it hard; 1,200 grains of water containing carbonic acid will hold in solution 1 grain of limestone. Limestone is insoluble in pure water; but water containing carbonic acid in solution can dissolve it.

Fishing Women.

On Long Island, Maine, there live secluded two women, a mother and daughter, the former being over 60 years of age, who are known as the "Fishing Women," who follow that business very closely, having made, annually, it is said, $200 dollars on an average, for fifteen years past, and nothing will induce them to change their employment. One of them came near being carried to the bottom by a hallibut a short time since. As is their custom, one sat in the bow and the other in the stern, with the little skiff nearly filled with fish. The woman in the bow of the boat hooked a very large hallibut, and called her associate in the stern of the boat to her help. In other circumstances they would have managed the unwelcome visitor well enough; and, in fact, he would have been very welcome to the bait; but now the mistress of the "stern" dared not leave her seat for fear of sinking their loaded boat. The fish was allowed to run to the bottom two or three times to get worried, and then drawn alongside, to be killed and drawn in. It seems he did not like to be mastered by a lone woman, and he resisted her attempt. In the affray a large cod hook, attached to the line, was drawn through the thick part of her hand,—and then came the danger. The unsubdued monster, being in his native element, now set out for the bottom again; but the heroine of the "bow" not wishing to accompany him clung to the boat. She was drawn nearly overboard but before loosing her hold of the boat, the line providentially parted, and the thus became disengaged! To this fact alone, she owes the preservation of her life. The fish was 9 feet in length.

We see stated, that Messrs. White and Thayer, of West Medway, Mass., are about to commence the manufacture of cotton goods.

Peter M. Deshong, the Mathematician.

The accounts of Mr, Deshong's wonderful powers have been circulated from one end of our country to the other, and have awakened much curiosity regarding his person and qualifications. Mr. Deshong is a native of Lancaster, Pennsylvania, and is only 23 years of age. His calculating powers have astonished all those who have witnessed their exhibition. We have seen him add up the sum total of four columns of figures eight in each column, as quick as we could write down the single figures in the answer, and we have heard him tell the number of seconds there were in three years and five months, without writing down a figure—giving the answer from mental calculation, as quick as the question was asked. Any mathematical problem whatever, can be solved by him in a remarkably short space of time.

He has calculated in the Boston custom house columns of figures 3000 in length and 20 in breadth, in the short space of five seconds, quicker than it could be measured. And at the Washington Observatory, he calculated faster than fifteen of the scientific gentlemen could do altogether upon the same subject, viz. the comet of the sixteenth century. Mr. Deshong exterminates problems with almost telegraphic rapidity, always beginning to set down the answer at the left. He says that at five years of age he exhibited his mathematical talents, which in his case are a natural gift, no other member of his family having exhibited any mathematical genius. He has discovered the rules of teaching this art, which he proposes to instil into the mind of any person in the short space of half an hour. He is undoubtedly a remarkable man.

Habits of Animals.

You cannot alter the nature of an animal by changing its food. It will still belong to the family. In this particular, bees are better instructed. When they loose their queen bee—which is an entirely different animal from the working bee—if you present another within twenty-four hours they will not accept her nor obey her. They prefer taking an ordinary grub, before he becomes a flier, and feeding it with a particular food and treating it in a particular way, and when it leaves the grub state, it becomes a queen bee, and they always suffer themselves to be governed by her.

The habits of ants are extremely curious. We all have heard of ant houses, sometimes twenty feet in diameter, filled with halls and rooms of great strength. These and beaver dams are constructed upon strictly mechanical principles

In some insect species, the males have wings while the females have none. This is the case with the glow worm, and the female has the property of emitting a phosphorescent light, and were it not for this, the gentleman glow worm would not find his way to his lady's chamber. The ostrich, unlike other birds, is not provided with means of sitting down. She cannot, therefore hatch her eggs, but buries them in hot sand, and leaves nature to hatch them for her. Some birds build no nests, like the cukoo, which deposits her eggs in the nests of other birds—but she knows enough always to select the nests of birds that have bills shaped like her own, for then she is assured her young will have the same kind of food as she will procure.

Fall of a Railway Viaduct in France.

A serious disaster has occurred on the new line of railway between Avignon and Marseilles, which was just ready to be opened. The viaduct, which carried the railway over the river Neurthe, one of the principal works of art upon the line, has fallen. It appears that no lives have been lost. The damage will amount from 2,000,000 to 3,000,000 frs.

An Engineer is now engaged in staking out the ground for the bridge across the Ohio at Wheeling.—The space will be exactly 1010 feet from centre to centre of the abutments.

Fishes Tamed by a Child.

The Boston Transcript says, that in a quarter of the town of Hingham, known as Rockynook, there is a pond, where a little girl not six years old, who resides near the bank, has tamed the fishes to a remarkable degree. She began by throwing crumbs in the water. Gradually the fishes learned to distinguish her footsteps and darted to the edge whenever she approached; and now they will actually feed out of her hand and allow her to touch their scaly sides. A venerable turtle is among her regular pensioners. The control of Van Amburgh over his wild beasts is not more surprising than that which this little girl has attained over her finny playmates. Visitors have been attracted from a distance of several miles to the spectacle she exhibits. The fishes will have nothing to do with any one but their tried friend. They will trust no one else, let him come with provender ever so tempting. Even fishes are not so cold blooded but they will recognize the law of kindness, and yield to its all embracing power.

A Speculation City.

About a dozen years ago, some speculators undertook to make a city where nature never intended one should be, on the flat land opposite to Washington. It was to be a great commercial city, and was to monopolize a vast amount of trade. A letter from Washington, says that not a single house has been erected in Jackson City since its foundation—not a lot bought by the speculators; but that, on the other hand, the very corner stone has been sacrilegiously broken into and plundered of its newspapers, parchments, charter, coins and medals, and the last heard of the corner stone is that it has been carried up into the Fairfax county, where, at the last advices, an old negro was pounding hominy on it.

Fossil Lion.

A French engineer charged with the duty of inquiring into the nature and condition of the mines, in the southeast of the empire of Morocco, has discovered in the province of Tetuan fossil bones of great interest. Amongst them is the entire skeleton of a lion of gigantic size. These remains have been forwarded to Paris.

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"W. C. B. of R. J."—We have answered your communication, and sent you the desired information.

"W. M. of Macon, Ga."—The full list of every article patented is received every week from the Patent Office, and published by us regularly. The laws and directions for persons transacting business at the Patent Office are to be found in full, published in the first numbers of Vol. 2d, of the Scientific American. A full description of all articles patented is not to be found in any work whatever.

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"G. W. R. of Boston,"—You will get the required information in the article arranged for the very purpose entitled "Oxygen Gas."

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"F. L. T. of N. C."—You must begin at the foundation of the Science of Chemistry. Beck's Elements, is a good work for the student.

"G. W. W. of Vt."—Scribners' Engineer's and Mechanic's Companion is an excellent work, and one which you ought to possess.

"R. R. of Vt.,"—Your machine appears to be more subject to the law of inertia than motion. The fault is that the propelling power is less than the resistance to be overcome.

"C. K. of Stanton, Va."—Your letter came duly and the papers were immediately sent.

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The sage, and the beetle at his feet, hath each a ministration to perform.

The briar and the palm have the wages of life, rendering secret service.

Neither is it thus alone with the definite existences of matter;

But motion and sound, circumstance and quality, yea, all things have their office.

The zephyr playing with an aspen leaf—the earthquake that rendeth a continent;

The moonbeam silvering a ruined arch—the desert wave dashing up a pyramid;

The thunder of jarring icebergs,—the stops of a shepherd's pipe;

The howl of the tiger in the glen,—and the wood-dove calling to her mate;

The vulture's cruel rage,—the grace of the stately swan;

The fierceness of the lynx's eye, and the dull stupor of the sloth:

To these, and to all, is there added each its use, tho' man considereth it lightly;

For Power hath ordained nothing which Economy saw not needful.

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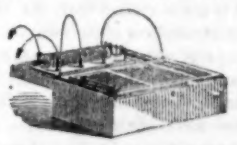

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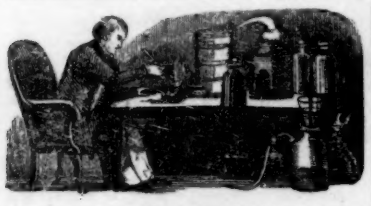


Oxygen Gas.

The atomic weight of this gas is 8. It is one of the most important agents in nature.—Scarcely a process of any description takes place. in which it has not a place. In a simple state it is obtained only in its gaseous form. The atmosphere contains one-fifth of its bulk of it, and water 75 parts in 100. It is colorless, invisible, tasteless, inodorous and elastic It is slightly soluble in water and is a powerful supporter of combustion. If a lighted taper is put into a vase full of it, it burns with great splendor. Its presence is essential to animal life, it is called vital air, and a lighted body will burn longer in it than in an equal quantity of atmospherical air—hence it is a supporter of life and fire.

To make oxygen gas, put one ounce of the black oxide of manganese into a retort and pour upon it as much oil of vitriol (sulphuric acid) as will make it up into a thin paste.—Support the retort upon a wire stand and let the open end of it dip under a glass vessel filled nearly with water, which should be placed on the shelf of a pneumatic trough. Apply the gentle heat of a lamp to the retort and the oxygen will be expelled as long as the manganese contains any in it. The result of the experiment is, that the sulphuric acid expels part of the oxygen from the manganese and uniting with the residue forms sulphate of manganese

Ice Produced in a Red Hot Crucible.

A platina crucible is made and maintained red hot over a large spirit lamp. Some sulphorous acid is poured into it. This acid though at common temperatures one of the most volatile of known bodies, possesses the singular property of remaining fixed in the red hot crucible, and not a drop of it evaporates; in fact, it is not in contact with the crucible, but has an atmosphere of its own interposed. A few drops of water are now added to the sulphurous acid in the red hot crucible. The diluted acid gets into immediate contact with the heated metal—instantly flashes off, and such is the rapidity and energy of the evaporation, that the water remains behind, and is found frozen into a lump of ice in a red hot crucible!' from which, seizing the moment before it again melts, it may be thrown out before the eyes of the astonished observer!

This is indeed, "a piece of natural magic." It is certainly one of the most singularly beautiful experiments imaginable. It was recently devised by M. Provostaye of France, to illustrate the repellent power of heat radiating from bodies at a high temperature, and of the abstraction of heat produced by evaporation.

To Make a Beautiful Fire-Screen.

Draw a landscape on paper, with India ink, representing a winter scene, or mere outline, the foliage is to be painted with muriate of cobalt for the green, acetate of cobalt for blue, and muriate of copper for yellow, which when dry will all be invisible. Put the screen to the fire, and the gentle warmth will occasion the flowers &c., to display themselves in their natural colors, and winter be changed to spring. When it cools, the colors disappear, and the effect can be reproduced at pleasure.

Compound Motion.

If a body be propelled with a given force in one direction, and at the same time with another force in a different direction, the body will move in a direction partaking of both forces, and will move with a velocity greater than that of either of the forces. This may be seen when two men are standing on opposite sides of a vessel in full sail, throw a ball to each other. In this case the ball will pass directly from one to the other, notwithstanding the vessel has passed some distance while the ball is in the air. Here the ball is acted on by two forces, one given by the arm of the thrower, the other by the moving of the ship.

Curiosities of Art.

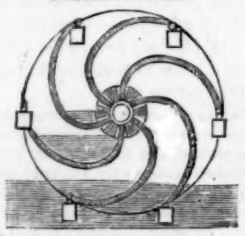
Dresden in Saxony, and capital of that country, is perhaps the most beautiful city in the world. It has been the theme of praise by every tourist who has travelled throughout Europe, Its beautiful gardens which line the banks of the Elbe, together with the recollections of its battles and its sieges, which fill the pages of warlike story, render it one of the most interesting portions of the wide earth to visit on that account, if for nothing more.—But Dresden is famous for her works of art. Her porcelain is still unrivalled, and her Museums are unequalled by those of any other city in the world, In the palace there is one chamber in which there are 100 small statues curiously wrought in brass, besides some huge statues of warriors and kings on horseback, surrounded with centaurs and innumerable figures of every description. There is another chamber, all of ivory, full of figures wrought in that beautiful stuff. There are fine crucifixes, ships in full sail, with gold wire for ropes and there are figures of Abraham offering up Isaac, with an angel descending and grasping the hand of the patriarch as it raised to give the fatal blow. This piece is five feet and a half high and of the most exquisite workmanship. There are two chambers of silver and gold, containing hundreds of figures of various sizes, with fountains and vases and cups and plate of great antiquity.

Another room is adorned with precious stones. There is a statue of one of the Kings of England, another of the archangel Michael vanquishing Satan, wrought in a wooden cup with all manner of gems, and it is two feet high. There are tables of the richest Mosaic work, cups of single stones and mother of pearl, and pearls in countless forms There is a statue of Stanislaus of Poland, wrought in onyz and the representation of Jonas thrown into the sea made of various gems and a great number of other works of the like nature.—There is a sword with a silver blade, so tempered that it will bend like steel and has a handle of gold—this is a present from one of the Popes to some of the Saxon Kings. There are six dozen court buttons and button holes, made of rose diamonds, as big as common sized walnuts. There is an emerald more than an inch long and an onyx of seven inches estimated at one hundred thousand dollars and there is a cup representing Diana in a bath made of gold and diamonds, sapphires and brilliants of every description.

(To be continued.)

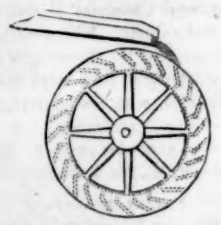
MECHANICAL MOVEMENTS

Persian Wheel.



The above is a sectional view of the oriental wheel used in the East for the purpose of irrigation. It consists of a hollow shaft attached to any number of floats of a curved form, having at the end of each a bucket, or tub, suspended. Supposing the wheel to be partly immersed in a stream of water acting on the convex surface of the floats, a portion of water will be elevated by each float at each revolution of the wheel and conducted to the hollow shaft at the same time that each of the buckets carry their amount of water to a higher level, when they are emptied by coming in contact with a stationary pin placed in a convenient situation for the purpose of tilting them. Like the power loom said to have been invented first in Germany in the fifteenth century, may we not be indebted to the curved wheel of the Persian, for the first idea of our modern reaction wheels. Solomon hath said that "there is nothing new under the sun," and certainly there are many things supposed to be new that have an ancient pedigree. The art of making glass was known to the ancient Romans, but was lost for two centuries and then discovered again. A great number of the useful arts, too, were known to the ancients, but unknown to us, such as the tempering of copper, liquid gold, &c. &c.

Overshot Wheel.



There are four kinds of water wheels now in use, viz. the overshot, breast, undershot and reaction wheels. The overshot is used where there is a scarcity of water; its construction being better adapted to economise water than either of the others, but it has this disadvantage, that it can only be used where there is a fall of water, as it is made upon the hydrostatic principle that the pressure is as the weight, and the weight is as the height, and also the hydraulic principle that the power water has to produce mechanical effect is as the quantity and fall of the perpendicular height. The mechanical effect of a wheel is as the quantity of water in the buckets and the velocity. Some time ago we presented an article on water wheels and we forbear now to say much upon the subject, only that there is a great diversity of opinion among millwrights themselves on the subject. A correct standard would be arrived at, if the effect of a number of wheels, of different diameters under different heads of water, was carefully registed by our practical men and the experiments compared together. It is calculated that the power is to the effect as 3 : 2, that is, suppose the power to be 9000, the effect will be

$$\frac{9000 \times 2 = 18000}{3} = 6000.$$

The higher the wheel is in proportion to the fall the greater will be the effect. Smeaton says that experience proves that the velocity of 3 feet per second is applicable to all overshot wheels. Banks and Smeaton disagree. It is evident that the velocities of wheels will be in proportion to the quantity of water and the resistance to be overcome; if the water flows slowly upon the wheel, more time is required to fill the buckets than if the water flowed rapidly, and whether Smeaton or Banks be taken a data, the millwright can easily calculate the size of his wheel when the velocity and quantity of water in a given time is known.

Wonders of Chemistry.

Aquafortis and the air we breathe are made of the same materials. Linen and sugar, and spirits of wine, are so much alike in their chemical composition, that an old shirt can be converted into its own weight in sugar, and the sugar into spirits of wine. Wine is made of two substances, one of which is the cause of almost all combustion on burning, and the other will burn with more rapidity than anything in nature. The famous Peruvian bark, so much used to strengthen stomachs, and the poisonous principle of opium are found of the same materials

Force of Gravity.

It has been ascertained, both by experiments and calculations, that heavy bodies descending from a height by the force of gravity, fall 16 feet the first second of time; three times that distance in the next; five times in the third; seven times in the fourth; and so on, regularly increasing their velocities. The successive spaces passed through in equal times will be as the odd numbers, 1,3,5,7,9,11.

Electropathic Operation.

The North Carolinian says, we lately witnessed the application of electro-magnetism for the removal of hemiphlegia or paralysis of one side of the body, by the Rev. Wm. H. Smith. The patient was a little boy between 6 and 7 years of age, who had been afflicted with this disease for five years. After the third application, the limbs of the affected side were perfectly restored to usefulness.

Female Soldiers.

The women of Sunderbund Cantons of Switzerland have formed themselves into a military body, amounting in number to 672. They carry muskets or carbines, have officers, pass words, and, in fact, a complete military organization.

RECEIPTS.

Blacking.

Mix three ounces of ivory black, two ounces of molasses, a table spoonful of sweet oil, one ounce of sulphuric acid, one ounce of gum arabic, dissolved in a pint of vinegar.

Harness Blacking.

Two ounces of mutton suet, six ounces of beeswax, six ounces of sugar, two ounces of soap and one ounce of powdered indigo, and when melted, mix all in a gill of turpentine. Put it on with a sponge, and then polish with a brush.

To Tin Iron.

Clean the iron well, either by filing, scraping, or any other means; make it warm, and apply to it pure tin, sprinkle over it pounded sal ammoniac and keep stirring the metal whilst in a fused state with a piece of sal ammoniac, fastened to a stick, until the iron is well coated with the tin.

To Wash Flannel.

Dissolve enough of the best soap, so that it will feel slippery in the hand, and then wash the flannel in it milk warm. Wring out and wash well before drying. It is an old custom to dry out of the soap, which is just like so much grease in the flannel afterwards.

Creeping Plants.

The Virginia creeper throws out tendrils in the form of a foot with five toes; and each toe throws out a number of hairs or spine, which entering the small openings of brick or lime, swell and hold on; but when decaying, they shrink and the plant falls off. The Vanilla plant of the West Indies exhibits a similar construction, except that it winds itself around other objects.

A Horticultural Feat.

A gardener of Devonshire, Eng., has succeeded in ripening pine apples in the open air. The manner was simple and the result perfectly satisfactory. After the fruit was set in May last, the pots containing the plants were placed in a trench sheltered from cold winds, and covered with charred hay, and the result has been ripe pines of excellent flavor.

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